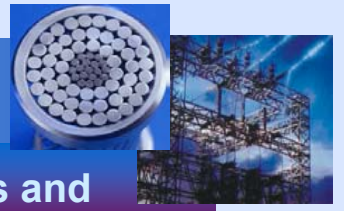
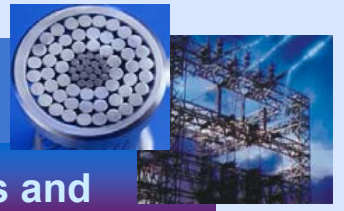


Top Substations and Protective Equipment Needs

- #1 – Develop operational and diagnostics decision support tools for asset management
- #2 – Develop inexpensive fault current limiters
- #3 – Develop cost-effective, flexible, standard transformers that have a longer life expectancy
- #4 – Standards for products, modularity, international protocol for all IED devices, and state-of-the-art substation designs
- #5 – Develop low-cost sensors for diagnostic use of substation equipment
- #6 – Develop a standard cybersecurity method/equipment to allow secure and reliable supervisory control



Major Themes

- Security – coordination (DHS, OEA, DOD, OETD); recognition that security provides operational and cost burdens that must be focused and graded.
- Standardization is key to cost reduction and life cycle management of equipment and system level software tools
- Balanced portfolio is important – long-term technologies and short term applications
- GridWorks can provide the vehicle to coordinate and fund initiatives for asset management and promulgate and encourage best practices
- GridWorks can identify and publicize ongoing commercial and non-DOE research efforts to support wider participation and engagement